AMENDMENTS

In the Claims

1-22. (Canceled)

23-26. (Previously Canceled)

27. (Currently Amended) A hypervelocity particle shield for protection against at least one hypervelocity particle having a normal velocity component greater than 6.4 km/s, comprising:

a plurality of spaced apart flexible shield layers, at least one of which is made of a flexible ceramic fabric;

a resilient support layer between adjacent ones of the flexible shield layers, the resilient support layer including at least one space qualified foam layer, wherein the at least one flexible shield layer has an areal density (m_b) that is substantially equal to $m_b = 0.185 \cdot d \cdot \rho_p$, wherein d equals the diameter of the hypervelocity particle, and ρ_p equals the density of the hypervelocity particle ~~a predetermined constant times a hypervelocity particle's cubic density multiplied by its diameter~~;

at least one thermal insulation layer disposed on the plurality of flexible shield layers;

a vented, abrasion resistant protective cover configured to enclose the flexible shield layers and having an absorptivity to emissivity ratio selected to provide a predetermined level of thermal protection; and

fasteners attached to the protective cover and capable of releasably securing the flexible shield layers to a structure to be protected.

28. (Original) The hypervelocity particle shield of claim 27, wherein the space qualified foam layer includes an open-cell foam layer.

29. (Original) The hypervelocity particle shield of claim 27, wherein the space qualified foam layer includes a closed-cell foam layer, each cell therein containing a predetermined low-pressure gas.

30. (Original) The hypervelocity particle shield of claim 27, wherein the support layer further includes a ceramic foam layer.

31. (Original) The hypervelocity particle shield of claim 27, wherein the support layer has one or more portions removed therefrom.

32. (Original) The hypervelocity particle shield of claim 27, wherein the fasteners include one or more snap fasteners.

33. (Original) The hypervelocity particle shield of claim 27, wherein the fasteners include one or more straps.

34. (Previously Amended) The hypervelocity particle shield of claim 27, wherein the fasteners include at least one VELCRO™ hook and loop material fastener.

35-38. (Canceled)

39. (Currently Amended) A particle shield designed to provide reliable protection against at least one hypervelocity particles having a normal velocity component greater than 6.4 km/sec, comprising:

a plurality of flexible shield layers wherein at least one flexible shield layer has an areal density (m_b) that is substantially equal to $m_b = 0.185 \cdot d \cdot \rho_p$, wherein d equals the diameter of the hypervelocity particle, and ρ_p equals the density of the hypervelocity particle ~~a predetermined constant times a hypervelocity particle's cubic density multiplied by its diameter~~;

a resilient support layer between adjacent ones of the flexible shield layers;

a protective cover configured to enclose the flexible shield layers; and

fasteners associated with the protective cover and capable of releasably securing the flexible shield layers to a structure to be protected.

40. (Currently Amended) A particle shield designed to provide reliable protection against an impact of at least one hypervelocity particle, comprising:

a plurality of flexible shield layers comprising at least one back wall layer;

a resilient support layer between adjacent ones of the flexible shield layers;

a protective cover configured to enclose the flexible shield layers; and

fasteners associated with the protective cover and capable of releasably securing the flexible shield layers to a structure to be protected,

wherein the particle shield has an overall thickness (S) that is based on a critical diameter (d_c) of

~~a~~ the hypervelocity particle to be shocked,

wherein $d_c = 0.41 m_w^{1/3} \cdot S^{2/3} \cdot \rho_p^{-1/3} \cdot V^{-1/3} (\cos\theta)^{-1/3}$ for V greater than or equal to $6.4/(\cos\theta)^{0.25}$ km/s,

$$d_c = 0.221 m_w^{1/3} \cdot S^{2/3} \cdot \rho_p^{-1/3} \cdot (\cos\theta)^{-0.25} \cdot [(V - 2.4/(\cos\theta)^{0.5})/(6.4/(\cos\theta)^{0.25} - 2.4/(\cos\theta)^{0.5})] + 1.506 \rho_p^{-1/2} \cdot (0.5 m_w + 0.37 m_b) \cdot (\cos\theta)^{-1} \cdot [(6.4/(\cos\theta)^{0.25} - V)/(6.4/(\cos\theta)^{0.25} - 2.4/(\cos\theta)^{0.5})]$$

for V less than $6.4/(\cos\theta)^{0.25}$ km/s, but greater than $2.4/(\cos\theta)^{0.5}$ km/s, or

$d_c = 2.7\, V^{-2/3} (\cos\theta)^{-1/3} \rho_p^{-1/2} [0.5 m_w + 0.37 m_b]$ for V less than $2.4/(\cos\theta)^{0.5}$ km/s, and

wherein m_w is the areal density of the back wall layer, m_b is the areal density of the flexible shield layer that is not a back wall layer, V is the velocity of the hypervelocity particle, ρ_p is the density of the hypervelocity particle, and θ is the impact angle measured from a vector normal to the impact surface.